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# Fernán Agüero PhD

Assistant Professor, University of San Martín

Principal Research Fellow, National Research Council

**About me.** I am a Biologist by training, with a PhD in Chemistry and postdoctoral training in Genomics and Bioinformatics. I have studied parasite biology for >20 years, focusing on different aspects (biochemistry, molecular biology, genomics) and using different approaches (experimental bench work, bioinformatics) over time. I also have an interest in teaching and training of human resources, and in the promotion of Bioinformatics. I teach a Computational Biology and Bioinformatics course for both graduate and undergraduate students, and am a founding member of the Argentinian Society for Computational Biology and Bioinformatics (A2B2C).

## Education

### 2001, PhD (Chemistry)

Instituto de Investigaciones Bioquímicas "Luis F. Leloir", Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires.

### 1995, BSc. (Biology)

Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires.

## Research Positions and Experience

### 2005 – present, Group Leader

Laboratory of Genomics and Bioinformatics, Instituto de Investigaciones Biotecnológicas, Universidad de San Martín, Argentina.

### 2017 – present, Principal Research Fellow

### 2013 – 2017, Independent Research Fellow

### 2008 – 2012, Associate Research Fellow

### 2005 – 2007, Assistant Research Fellow

Scientific Research Career, National Research Council of Argentina (CONICET).

### May – June 2005, United Nations University fellow

Programme for Biotechnology in Latin America and the Caribbean, visiting the laboratory of Dr. JC Kissinger, University of Georgia, USA.

### 2001 – 2005, Postdoctoral fellow

Instituto de Investigaciones Biotecnológicas, Universidad de San Martín, San Martín, Argentina.

### 1995 – 2001, PhD Student

Instituto de Investigaciones Bioquímicas "Luis F. Leloir", Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires, Buenos Aires, Argentina.

## Awards

**1996** Luis F Leloir Fellow, Fundación Campomar

## Research / Teaching

**2019** Immunoinformatics Course, Mexico City, April 8-9, Center of Complexity Sciences, Universidad Autónoma de Mexico (UNAM).

**2017 – present** Category I – Special Program of Incentives to Researchers in Education, Secretary of University Policies, Ministry of Education, Argentina.

## Teaching Positions and Experience

### **2005 – present**

Assistant Professor (Bioinformatics, Computational Biology), Instituto de Investigaciones Biotecnológicas, Universidad de San Martín, San Martín, Argentina.

### **2009 – 2017**

Invited Professor, “Bioinformatics”, Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires.

### **2008 – 2015**

Instructor, Wellcome Trust Advanced Training Workshop “Working with Pathogen Genomes” (Montevideo, Uruguay; Hinxton, UK).

### **2009 – 2017**

Invited Professor, “Molecular Biology of Lower Eukaryotes”, Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires.

### **2010**

Instructor, “Working with Pathogen Genomes” (EuPathDB / TDR Targets / SchistoDB), 16–19 March, Instituto de Higiene, Montevideo, Uruguay.

### **2004 – 2006**

Invited Professor, “Computational Biology”. Master in Medical Molecular Biology, University of Buenos Aires.

### **2001 – 2004**

Instructor, Instituto de Investigaciones Biotecnológicas, Universidad de San Martín, San Martín, Argentina.

### **1997 – 2001**

Graduate Teaching Assistant, Instituto de Investigaciones Biotecnológicas, Universidad de San Martín, San Martín, Argentina.

### **1995 – 1997**

Undergraduate Teaching Assistant, Department of Biological Chemistry, Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires.

## Other honorary positions

### **A2B2C**

VicePresident (2009–2010, 2015–present), President (2010–2011), and Treasurer (2012–2015), Argentinian Society for Bioinformatics and Computational Biology.

### **FIIB**

Vocal (2012–2019); Vicepresident (2019–), Fundación Instituto de Investigaciones Biotecnológicas

Complete list  
of publications  
available at:

**Google Scholar:**

[goo.gl/1GysDD](http://goo.gl/1GysDD)

H-Index = 21

**PubMed (NCBI):**

[bit.ly/2Vw9UPK](http://bit.ly/2Vw9UPK)

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## Recent Selected Publications

38 peer-reviewed articles, H-index = 21 (Google Scholar), 2 book chapters.

### 2019

Molecular and antigenic characterization of *Trypanosoma cruzi* TolT proteins. Lobo M, et al. **PLOS Neglected Tropical Diseases** 13: e0007245.

### 2017

Next-generation ELISA diagnostic assay for Chagas Disease based on the combination of short peptidic epitopes. Mucci JS *et al.* **PLOS Negl Trop Dis** 11: e0005972.

Novel scaffolds for inhibition of Cruzipain identified from high-throughput screening of anti-kinetoplastid chemical boxes. Salas Sarduy E, et al. **Scientific Reports** 7: 12073.

High-resolution profiling of linear B-cell epitopes from mucin-associated surface proteins (MASPs) of *Trypanosoma cruzi* during human infections. Durante IM *et al.* **PLOS Negl Trop Dis** 11: e0005986.

Chagas Disease Diagnostic Applications: Present Knowledge and Future Steps. Balouz V, Agüero F, Buscaglia CA. **Advances in Parasitology** 97: 1–45.

### 2016

A Multilayer Network Approach for Guiding Drug Repositioning in Neglected Diseases. Berenstein AJ, Magariños MP, Chernomoretz A, Agüero F. **PLOS Negl Trop Dis** 10: e0004300.

### 2015

Neglected Tropical Diseases in the Post Genomics Era. Buscaglia CA, Kissinger JC, Agüero F. **Trends in Genetics** 31: 539-55.

Towards high-throughput immunomics for infectious diseases: use of next-generation peptide microarrays for rapid discovery and mapping of antigenic determinants. Carmona SJ *et al.* **Mol Cell Proteomics** 14: 1871–84.

### 2014

Genetic profiling of the isoprenoid and sterol biosynthesis pathway genes of *Trypanosoma cruzi*. Cosentino RO and Agüero F. **PLOS One** 9: e96762.

### 2012

Diagnostic Peptide Discovery: Prioritization of Pathogen Diagnostic Markers Using Multiple Features. Carmona SJ, Sartor P, Leguizamón MS, Campetella O, and Agüero F. **PLOS One** 7: e50748.

A simple strain typing assay for *Trypanosoma cruzi*: discrimination of major evolutionary lineages from a single amplification product. Cosentino RO and Agüero F. **PLoS Negl Trop Dis** 6: e1777.

TDR Targets: a chemogenomics resource for neglected diseases. Magariños MP, Carmona SJ, Crowther GJ, Ralph SA, Roos DS, et al. **Nucleic Acids Res** 40: D1118.

## 2010

Identification of attractive drug targets in neglected-disease pathogens using an *in silico* approach. Crowther GJ, Shanmugam D, Carmona SJ, Doyle MA, Hertz-Fowler C, et al. **PLoS Negl Trop Dis** 4: e804.

## 2008

Genomic-scale prioritization of drug targets: the TDR Targets database. Agüero F, Al-Lazikani B, Aslett M, et al. **Nature Reviews Drug Discovery** 7: 900.

## Recent Participation in Committees and Boards

**2015–present** Editor, Microbial Genomics (MGen), Society for General Microbiology, UK.

**2012 – 2018** Member of the Advisory Board of the Instituto de Investigaciones Biotecnológicas, Universidad de San Martín.

**2009 – present** Member of the Advisory Committee of the TriTrypDB Database Resource for *Trypanosoma cruzi*.

**2016** Conference Chair, 2016 ISCB Latin America Conference on Bioinformatics, Buenos Aires, Argentina

**2014** Member of the Steering Committee, 2014 ISCB Latin America Conference on Bioinformatics, Rio de Janeiro, Brazil.

**2013** Member of the Scientific Committee, 4th Argentinian Congress of Bioinformatics and Computational Biology (A2B2C, Argentinian Society of Bioinformatics and Computational Biology).

## List of Active Awards and Grants

### 2016 – 2021

NIH, 1R01AI123070 “High-throughput epitope discovery: use of next-generation peptide chips for fast identification and fine mapping of diagnostic and prognostic markers for Chagas Disease” (Role: PI)

### 2019-2021

ANPCyT, PICT-2017-0175 “Immunomics applied to the massive discovery of new serological biomarkers for infectious diseases” (Role: PI)

## Participation in Scientific Societies

**ISCB** International Society for Computational Biology. Professional Member since 2008.

**A2B2C** Argentinian Society for Bioinformatics and Computational Biology. Founder Member, 2009.

**SAP** Argentinian Society of Protozoology and Parasitic Diseases. Active Member, since 2011.

**SAIB** Argentinian Society of Research in Biochemistry and Molecular Biology. Active Member, (since 2001).

## Mentorships / Training of Human Resources

Mentor of 18 students, Director of 7 PhD theses (3 underway)

**Mercedes Didier Garnham** Undergraduate student, Universidad Nacional de Hurlingham (2019–), Project: “A comparative chemogenomics strategy to identify conserved druggable modules across species”.

**Melissa S Nolan** PhD, Master of Public Health, Assistant Professor, University of South Carolina (2018–), Project: “Improving Chagas Disease Patient Diagnosis and Health Outcomes in the Southwestern United States: Epidemiologic and Antigenic Characterization of Autochthonous Cases” (Brockman Foundation Research Grant).

**Leonel Bracco** Undergraduate, Agrobiotechnology Engineering (UNSAM) (2017–), Project: “High-throughput discovery of new IgM/IgG serologic biomarkers for Congenital Chagas Disease”.

**Alejandro Ricci** Lic. Biology (FCEyN UBA), PhD Student (2017–), Project: “Computational methods for large scale studies of human immune responses against pathogens: applications to Chagas Disease and Leishmaniasis”.

**Lionel Urán Landaburu** BSc. Biotechnology (UNQ), PhD Student (2016–), Project: “Chemogenomics applied to the identification of bioactive compounds against Chagas Disease”.

**Diego Ramoa, Mauricio Brunner** Undergraduate students, National University of Entre Ríos, Argentina. Degree Research Project: “Development of a server for prioritization of candidate diagnostic peptides from complete genomes” (2013–2016).

**Santiago Javier Carmona** BSc Biotechnology (UNSAM), PhD Student (2010–2015). Thesis: “High-throughput discovery of new serologic biomarkers for Chagas Disease”.

**María Paula Magariños** BSc. Biology (UBA), PhD Student (2009–2014), Postdoctoral fellow (2014–2016). Thesis: “Chemogenomics applied to the identification of new lead compounds for human pathogens”

**Raúl Oscar Cosentino** BSc Biotechnology (UNSAM), PhD Student (2009–2014). Thesis: “Design of a simple method for lineage typing in *Trypanosoma cruzi* and validation of candidate drug targets in trypanosomes”.

**Leonardo Gabriel Panunzi** BSc Biotechnology (UNQ), PhD Student (2007–2013), Postdoctoral fellow (2014–2016). Thesis: “Genome-wide discovery of single-nucleotide polymorphisms in *Trypanosoma cruzi*”.

**Other mentored students** María Carolina Dalmasso (UNSAM, 2010–2012); Laura Lazzati (UNSAM, 2015); Jose Antonio Agüero Fernandez (Cuba, 2008); Mariela Del Giudice (UNSAM, Argentina, 2006–2008); Alejandro Ackermann (UBA-UNSAM, 2005–2009); Claes Ladvall & Anders Brinne (Uppsala Universitet, Sweden, 2002); Linnea Kålgren (Uppsala Univesitet, Sweden, 2003);

## Languages

**Spanish:** Native.

**English:** Bilingual, full professional proficiency.

**Portuguese:** Working proficiency.

## CV last updated

May, 2019